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## BOOK REVIEWS

BIOLOGICAL ANTAGONISM, THE THEORY OF BIOLOGICAL RELATIVITY by Gustav J. Martin, Sc.D. Research Director, the National Drug Company, Philadelphia. The Blakiston Company, Phil. 1951. vi + 516 pp. \$8.50.

The author, on a well collected mass of evidence presents the theory of biological relativity, the basis of which provides that nothing, beyond time, is absolute in the living cell and that biological order is a consequence of antagonism. All enzyme specificity is relative rather than absolute and compounds structurally related to the substrate determine physiological order or balance. The field of pharmacology grows out of this relationship between synthetic analogues and the substrate. In this connection, cholinesterase, choline-acetylase, antispasmodics, dopa decarboxylase, antihistamines, barbiturates and morphine are considered with respect to their influence on enzymatic activity. For example, barbiturates are presented with emphasis on their apparent blockage of

carbohydrate dissimulation by biological antagonism. In terms of the theory the physiologist and the biochemist are concerned with naturally occurring antagonists to nitrilites. Structurally related compounds of amino acids, proteins, purines, lipids and vitamins are considered throughout fifteen of the twenty-two chapters. Chelation with respect to the antagonism of ions is treated briefly. Analysis of the antigen antibody reaction is compatible with the theories of Pauling which propose that biological forces at play in antibody formation are the ordinary short range ones existent between simpler molecules. In the first chapter there is provided a discussion of enzyme kinetics and inhibition which would serve as an introduction to the understanding of the theory of biological relativity. The final chapter considers the theory in the light of the evidence from the literature, in the preceding chapters. Whether he accepts the theory or not, the reader will recognize that there is offered here the first collection of studies of the type reviewed on structural analogues. Nineteen hundred references, alone, make it worthwhile for the medical scientist interested in pharmacology, immunology, chemotherapy, physiology or biochemistry.

L. M. MARSHALL

THE KIDNEY: STRUCTURE AND FUNCTION IN HEALTH AND DISEASE by Homer W. Smith, A.B., Sc.D., M.S., Professor of Physiology, New York University College of Medicine. Oxford University Press, Inc., New York, 1951. Illustrated, xxii + 1049 pp. \$12.50.

This is a monumental piece of work by a man who has made a significant contribution to our present day knowledge of kidney function. Dr. Smith is in large part responsible for the development and application of the clearance techniques in renal function studies. He has traced the evolutionary development of the primitive aglomerular kidney of small fish thru to the complex kidney of man. Much work has been done to validate the use of inulin in the determination of glomerular filtration rate and para-aminohippurate in the determination of renal blood flow and maximum tubular excretory ability. Part I of the book covers these discussions as well as the anatomy of the kidney, history and present day application of the urea clearance, clearances involving active tubular reabsorption and clearances involving active tubular excretion. Clearance studies of proteins, carbohydrates, inorganic chemicals and many other substances are discussed.

Part II consists of a discussion of the effect on renal function studies of hormones that influence water and salt metabolism, i.e. posterior pituitary and adrenal cortex. A chapter on the physiology of acid-base balance as applied to renal function is included.

Part III deals with the physiology and pharmacology of renal function. The discussions are most interesting and quite complete. Several stresses to the kidney, that are reported, are water diuresis, exercise, anoxia, pain, posture and agents that produce renal vasoconstriction and vasodilatation. There are two chapters of particular inter-